SPECIAL MEETING OF THE CPS ENERGY BOARD OF TRUSTEES
CONVENING AS THE RISK MANAGEMENT COMMITTEE
TO BE HELD ON NOVEMBER 3, 2025, AT 1:00 P.M.
LOCATION: CPS ENERGY BOARD ROOM (500 MCCULLOUGH AVE.)

*At any time during the Board Meeting, the Board may go into an executive session as permitted by the Texas Open Meetings Act, (Chapter 551 of the Texas Government Code) regarding any item on this agenda***.**

ITEM	TOPIC	ACTION	PRESENTER/ SPONSOR
1	**CALL TO ORDER**	Execute	Ms. Janie Gonzalez
2	**SAFETY MESSAGE, INVOCATION, & PLEDGE OF ALLEGIANCE**	Execute	Mr. Jason Hernandez
3	**PUBLIC COMMENT** Pre-Registration on Tuesday, October 28, 2025, 5:00 PM – Friday, October 31, 2025, 1:00 PM. Dial (210) 353-4662 or email PublicCommentRegistration@CPSEnergy.com	Discuss	Ms. Janie Gonzalez
CONSENT AGENDA			
4	**APPROVAL OF:** • Minutes of the Risk Management Committee (RMC) meeting held on 6/16/2025	Vote	Ms. Janie Gonzalez
RISK MANAGEMENT COMMITTEE			
5	**COMMITTEE GOVERNANCE REVIEW**	Discuss & Vote	Ms. Janie Gonzalez
6	**ENTERPRISE RISK MANAGEMENT UPDATE**	Discuss	Ms. Annamarie Rangel
7	**MACROECONOMIC UPDATE**	Discuss	Mr. Gautam Shringarpure
8	**RISK, RELIABILITY, AND RESILIENCY**	Discuss	Ms. Lori Lopez
9	**DISTRIBUTION SYSTEM RELIABILITY AND RESILIENCE**	Discuss	Mr. Durgesh Manjure (EPRI)
CONVENE TO EXECUTIVE SESSION			
10	**EXECUTIVE SESSION:** A. Competitive Matters (§551.086) & Attorney-Client Matters (§551.071) B. Security Personnel or Devices (§551.076) & Attorney-Client Matters (§551.071)	Discuss	Ms. Janie Gonzalez
11	**REVIEW OF ACTION ITEMS**	Discuss	Ms. Janie Gonzalez
12	**ADJOURNMENT**	Execute	Ms. Janie Gonzalez
If the Board meeting has not adjourned by 3:45 PM, the presiding officer shall entertain a motion to continue the meeting, postpone the remaining items to the next Board meeting date, or recess and reconvene the meeting at a specified date and time.			

CPS ENERGY
MINUTES OF THE SPECIAL MEETING OF THE BOARD OF TRUSTEES
HELD ON JUNE 16, 2025

The Special Meeting of the CPS Energy Board of Trustees convening as the Risk Management Committee was held on Monday, June 16, 2025, in the Board Room on the First Floor of the CPS Energy Headquarters located at 500 McCullough, San Antonio, Texas.

I. CALL TO ORDER

Trustee Gonzalez called the meeting to order at 1:00 p.m.

Present were Board members:
Ms. Janie Gonzalez, Chair
Dr. Willis Mackey
Dr. Francine Romero
Mr. John Steen
Mayor Ron Nirenberg (Absent)

Also present were:
Mr. Rudy Garza, President & CEO
Ms. Shanna M. Ramirez, Chief Legal & Ethics Officer, General Counsel & Board Secretary
Ms. Elaina Ball, Chief Strategy Officer
Mr. Benny Ethridge, Chief Energy Supply Officer
Ms. DeAnna Hardwick, Chief Customer Strategy Officer
Mr. Cory Kuchinsky, Chief Financial Officer & Treasurer
Ms. Lisa Lewis, Chief Administrative Officer
Mr. Richard Medina, Chief Energy Delivery Officer
Mr. Evan O'Mahoney, Chief Information Officer
CPS Energy staff members
Interested Citizens

II. SAFETY MESSAGE, INVOCATION, & PLEDGE OF ALLEGIANCE

A safety message, invocation, and the Pledge of Allegiance were delivered by Ms. Heather Gomez, Board Relations Manager.

III. PUBLIC COMMENT

There were no members of the public wishing to provide public comment.

IV. APPROVAL OF CONSENT AGENDA

A. Minutes of the Risk Management Committee Meeting held on November 12, 2024

Trustee Dr. Mackey made a motion to approve the minutes, which was seconded by Trustee Dr. Romero. The motion was approved on a 3-1 vote, with Mayor Nirenberg being absent and Trustee Steen voting against the motion.[1]

V. ENTERPRISE RISK MANAGEMENT UPDATE

Ms. Annamarie Rangel, Director, Enterprise Risk Management & Solutions, provided an Enterprise Risk Management (ERM) Update. She noted that for Enterprise Risk Management, engaging all levels of the organization ensures that the risk landscape reflects the appropriate challenges and opportunities. She then explained the process in the annual Enterprise Risk Register Refresh, provided a summary, and addressed next steps.

The Board of Trustees discussed the presentation and asked questions. There was a focus on whether changes in climate regulations under the new presidential administration should be covered in a Risk Management Committee meeting. CPS Energy management noted that changes in federal regulations, and their impact to CPS Energy, will be covered in the generation plan update and related discussions on generation and financial planning with the Board of Trustees.

VI. MANAGING DEMAND FORECAST AND LARGE ENERGY REQUESTS

Mr. Benjamin Jordan, Interim Senior Director, Integrated System Planning, reviewed the load forecast for peak demand. He then reviewed the process and procedures on how CPS Energy is addressing large load requests through our integrated system planning and internal alignment.

The Board of Trustees discussed the presentation and asked questions primarily focused on further detailing the risks related to meeting the demand or not meeting the demand, how these costs are recovered, and how customers become aware of our process. CPS Energy management noted that this was another topic that will be covered in various aspects throughout the year in other meetings.

VII. VISION 2027 GENERATION PLAN – RISK UPDATE

Mr. Benny Ethridge, Chief Energy Supply Officer, provided a risk update on the Vision 2027 Generation Plan. He reviewed the ERCOT demand outlook and noted that continued load growth is driving the need for new generation capacity. Finally, he noted that mitigation plans have been established to address key risks and support goals for reliability, affordability, and environmental responsibility.

[1] Trustee Steen requested that his comments be included in total and provided his written summary, which is attached to the meeting minutes as Attachment "A".

The Board of Trustees discussed the presentation and asked questions primarily focused on the pace of change, the regulatory climate, accurate load forecasting, and meeting demand within regulatory timelines and supply chain constraints.

VIII. MACROECONOMIC UPDATE

Mr. Cory Kuchinsky, Chief Financial Officer and Treasurer, presented on the economic conditions we are monitoring and how it impacts the business. He also noted that understanding the macroeconomic picture provides guidance and helps drives better business decisions.

The Board of Trustees discussed the presentation and asked questions with a focus on mitigating risks and the best options to execute our financial plan.

IX. AI – A UTILITY'S PERSPECTIVE

Mr. Bill Kost, Energy, Power, and Renewables Advisory Leader at Marsh, presented on artificial intelligence within the utility industry.

The Board of Trustees discussed and asked questions about the presentation with a focus on how CPS Energy is appropriately analyzing AI for use.

X. EXECUTIVE SESSION

The item related to Attorney-Client and Competitive Matters was not discussed, and no Executive Session was held.

XI. REVIEW ACTION ITEMS

Ms. Ramirez noted that there were no open actions items from the last Risk Management Committee meeting, and she reviewed the new action items from this meeting.

XII. ADJOURNMENT

There being no further business to come before the Committee, upon a motion duly made by Trustee Dr. Mackey, seconded by Trustee Gonzalez, and upon an affirmative vote by all members present, the meeting was unanimously adjourned at 3:02 p.m. by Trustee Gonzalez.

_____

Shanna M. Ramirez
Secretary of the Board

CPS Energy
Board of Trustees

RISK MANAGEMENT COMMITTEE CHARTER

I. Role of the Risk Management Committee

The Risk Management Committee is a standing committee of the CPS Energy Board of Trustees ("Board"). The role of the Risk Management Committee is to assist the Board in ensuring that internal and external enterprise risks that might adversely affect the organization are appropriately identified and mitigated.

The role also includes coordination with other Board committees/members and maintenance of strong, positive working relationships with management and consultants or advisors as may be necessary.

II. Authority

The authority of the Committee is to exercise its business judgment and recommend risk management practices to the Board and/or management actions the Committee reasonably believes are in the best interest of CPS Energy. It also includes consulting with and reviewing information from management and external sources, as needed, to become familiar with and provide oversight and guidance concerning CPS Energy's risks and mitigations. The kinds of risk to be considered include, but are not limited to, financial, operational, regulatory climate, investment, and emerging utility risks.

III. Committee Membership

The Risk Management Committee shall consist of all Board members. Appointment of the Chair of the Committee shall be approved at least biennially by the full Board.

IV. Meetings

The Risk Management Committee shall meet at least two (2) times per calendar year. Additional meetings shall be scheduled as considered necessary by the Committee or Committee Chair. All members are expected to attend each meeting. The Committee may invite members of management or others to attend meetings and provide pertinent information, as necessary. The Committee may also conduct meetings in executive session as warranted and as permitted by law. Minutes of meetings will be prepared by staff and approved by the Board at a regularly scheduled Board meeting or at the next Risk Management Committee meeting.

V. Responsibilities

The Risk Management Committee is tasked with the following responsibilities:

- Ensure the Enterprise Risk Management Program includes standard practices and procedures that allows for the identification, assessment, and mitigation of enterprise risks.

- Review CPS Energy's enterprise risks and risk management practices. Documents that may be reviewed include, but are not limited to:
    - Enterprise Risk Register;
    - risk mitigation plans; and
    - current and emerging risk topics impacting CPS Energy's strategy, goals, and objectives.

- Ensure CPS Energy's enterprise risks are identified, relevant, and managed through appropriate mitigation plans.

- Recommend potential risk topics to be discussed as Risk Management Committee open and/or executive sessions to the Committee Chair. The Committee Chair will assist in developing the topics for the Risk Management Committee agenda.

- Confirm annually that the responsibilities outlined in this Charter have been sufficiently fulfilled.

- Perform other activities related to this Charter as requested by the Board.

- Review and update the Risk Management Committee Charter periodically.

This Charter of the Risk Management Committee of the CPS Energy Board of Trustees is hereby approved this 7th day of November 2018, and updated on this __th day of _____ 2025.

ENTERPRISE RISK MANAGEMENT UPDATE

PRESENTED BY:

Annamarie Rangel
Director Enterprise Risk Management & Solutions

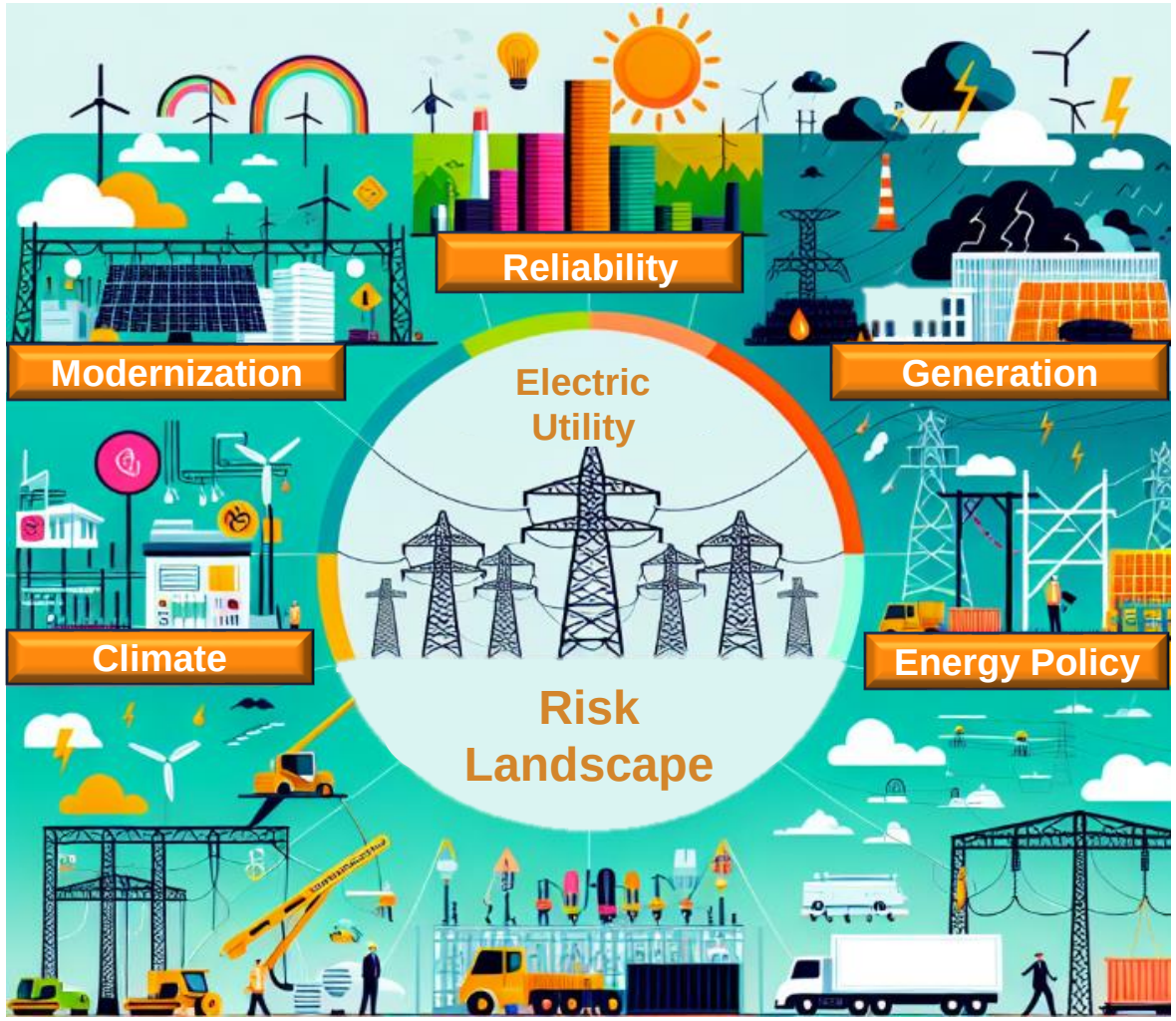
November 3, 2025
Informational Update

AGENDA

- Utility Risk Landscape
- Reliability & Resilience
- Emerging Risks
- Enterprise Risk Management Support
- Powering Forward

We are planning, preparing, and adapting to current and future challenges and opportunities.

NAVIGATING THE UTILITY RISK HORIZON

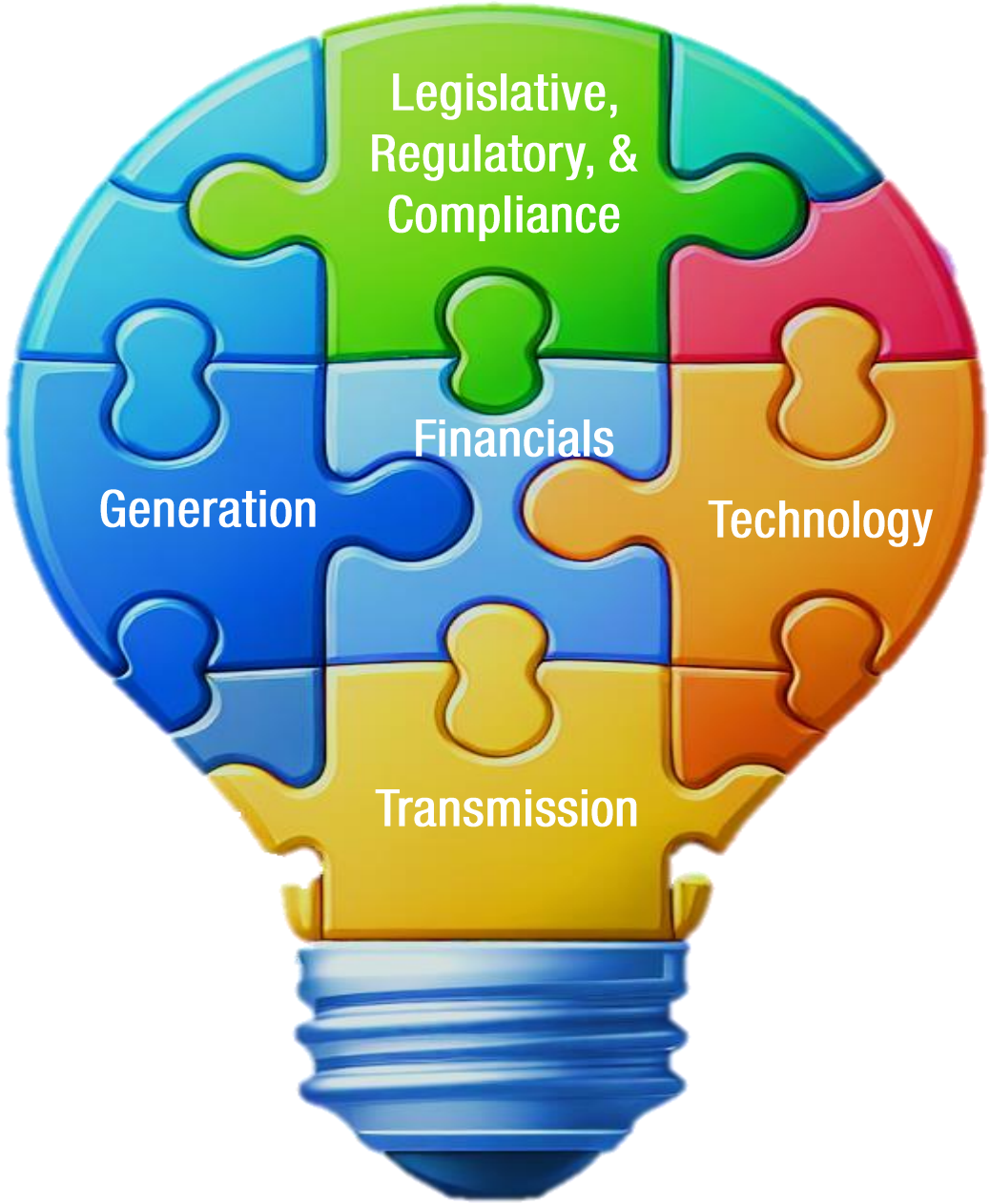


- Current industry risk topics include:
  - Reliability – outage trends and impact
  - Modernization – new skills, cyber, and cost
  - Generation – energy demand and growth
  - Climate – system stress, safety, and clean energy
  - Energy policy – coal and nuclear expansion
- Risks are increasingly interdependent, forming a complex and dynamic risk environment.
- Investments in system improvements and operational flexibility are critical.

Balancing growth with reliability, resilience, and affordability is a key focus of our strategic planning.

FROM RISKS TO RELIABILITY & RESILIENCE

Reliability and resilience have been the predominant risk themes discussed with the Board of Trustees over the past several months.



EMERGING UTILITY RISKS

GARTNER: 3RD QUARTER 2025

Demographic Filter: Industry - Utilities

Rank	Risk	Risk Score
1	Increased Extreme Weather Frequency and Severity	4.10
2	Increased Financial Exposure	3.65
3	IT Workforce Planning Uncertainty	3.27
4	Compromised Weather Forecasting	3.25
5	Low Growth Economic Environment	3.15
*5	Deglobalization	3.15

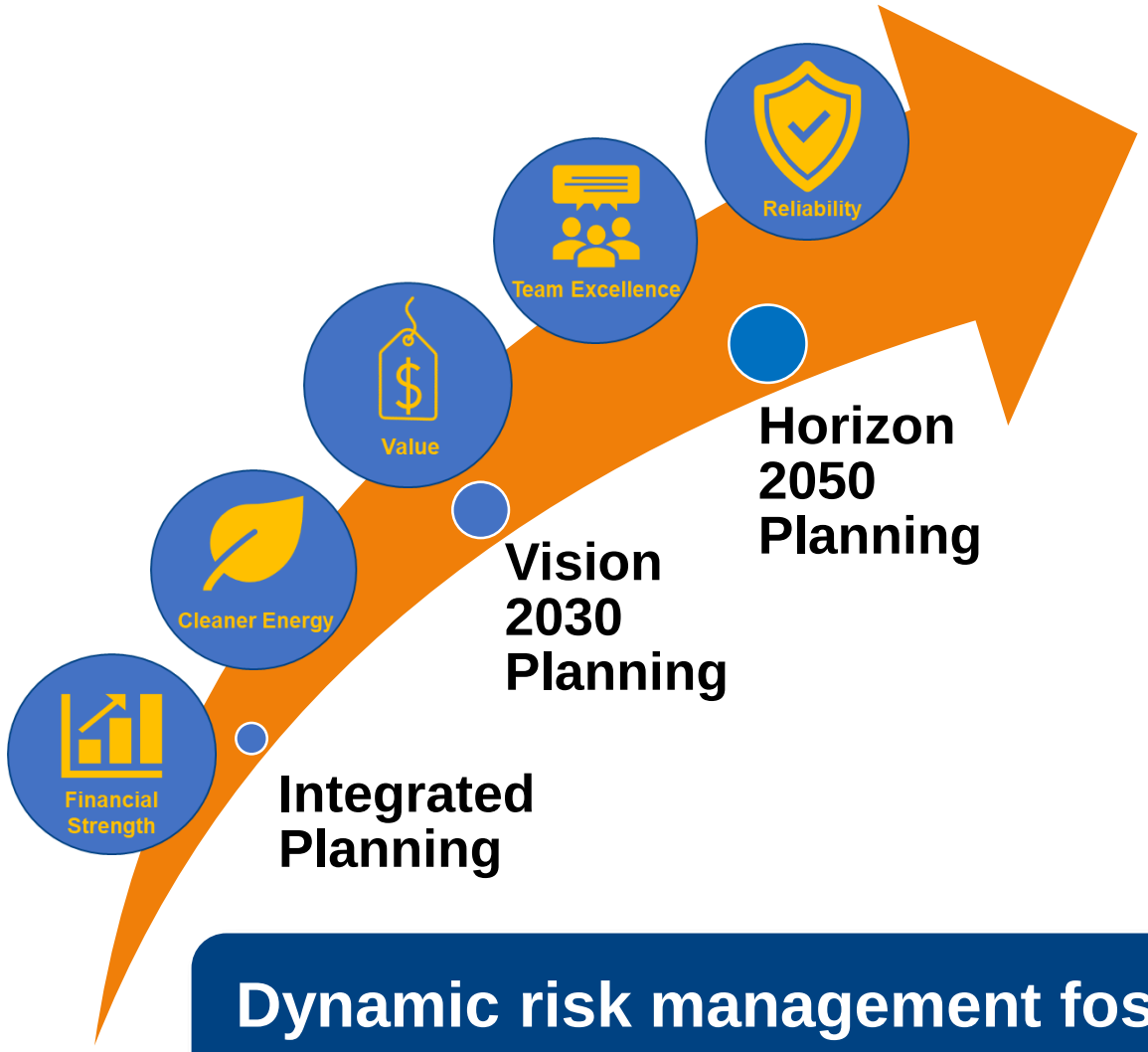
- Top emerging risk themes:
  - Climate
  - Financial
  - Talent
  - Political
- May have not already occurred or widely recognized
- Difficult to predict or assess due to limited data

We strive to focus on impact-driven solutions aligned with long-term strategic objectives. Emerging risks require a thoughtful approach due to their evolving nature, limited precedent, and uncertain outcomes.

Source: 3Q25 Gartner Emerging Risk Report
*Two emerging risks share the fifth position in the ranking.

STRATEGY UNDER PRESSURE

RISK MANAGEMENT IN A DYNAMIC UTILITY LANDSCAPE



Risk Management shapes strategic decision-making by:

- Identifying, assessing, and mitigating immediate threats that could be disruptive
- Ensuring planning processes are risk-informed; integrating potential risks and uncertainties
- Ensuring diverse perspectives inform risk identification and management
- Evaluating emerging risks and opportunities
- Supporting business continuity and stability

Dynamic risk management fosters resilience and empowers the organization to proactively adjust to the evolving environment.

INDEPENDENT VERIFICATION & VALIDATION

SUPPORTING ENTERPRISE RESOURCE PLANNING SUCCESS

- ✓ Gartner completed observations and risk identification of:
  - Global Design workshops
  - Governance meetings
  - Key Design Decisions (KDDs)
  - Business Process Designs (BPDs)
  - Change management strategy
- ✓ Completed a baseline risk assessment
- ✓ Continue sharing best practices

Gartner is a second pair of expert eyes on the ERP project, proactively identifying risks and ensuring mitigation plans are in place.

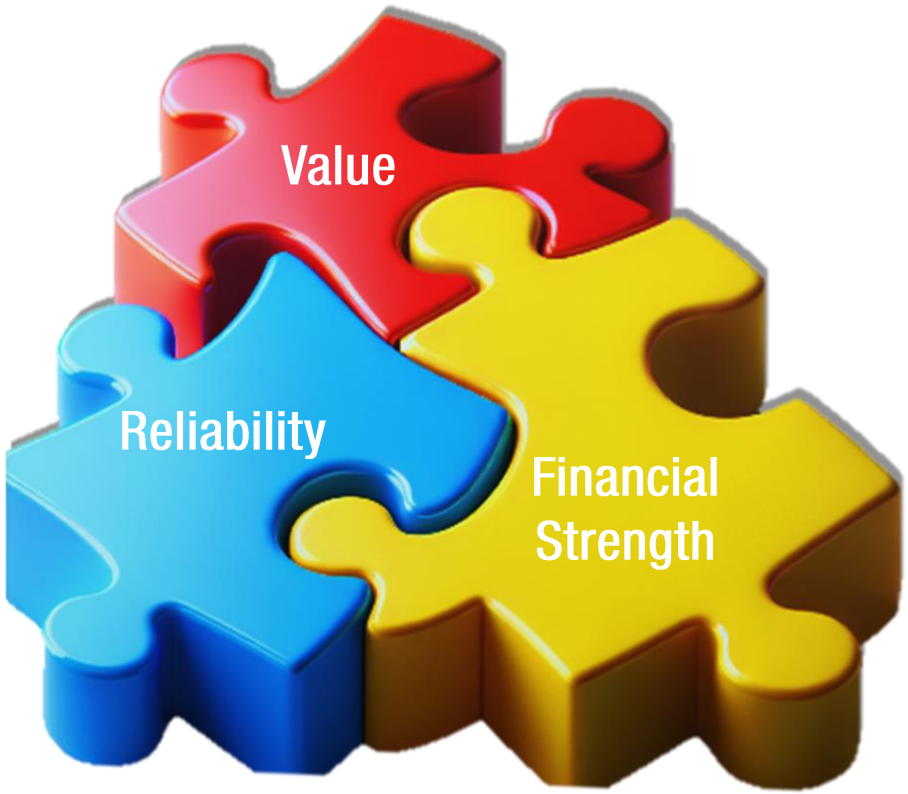
ENTERPRISE RISK MANAGEMENT PRIORITIES

- Continue to mature Enterprise Risk Management (ERM) to actively adapt to changes and mitigate potential threats
- Drive and support cross-functional risk and mitigation discussions for a holistic approach
- Enhance ERM Program tools
- Continue to expand risk awareness through engagement and education

ERM bridges risk and reward, empowering our organization to pursue opportunities with confidence by managing potential downsides in alignment with strategic objectives.

POWERING FORWARD

PIECING TOGETHER RISKS



Identifying and managing reliability and resilience risks advances us toward our Horizon 2050 goals.

- Balanced, continuous improvements
- Improved response & recovery
- Risk-informed budget & planning
- Enhanced customer trust and engagement

The session today will demonstrate how our commitment to financial stability, a reliable distribution system, and strategic investments underpins our ability to effectively manage operational and infrastructure risks.

THANK YOU

APPENDIX

GLOSSARY / DEFINITIONS

ACRONYM OR WORD	DEFINITION	ACRONYM OR WORD	DEFINITION
BPD	Business Process Design		
ERM	Enterprise Risk Management		
KDD	Key Design Decision		

MACROECONOMIC UPDATE

PRESENTED BY:

Gautam Shringarpure, CFA
Managing Fellow FS Strat Analysis & Implementation

November 3, 2025
Informational Update

AGENDA

- Economic conditions we track
- Macroeconomic picture
- Microeconomic picture
- Recap

The objective of today's meeting is to update the Risk Management Committee on the economic conditions we are monitoring and how it impacts our business.

ECONOMIC CONDITIONS WE'RE WATCHING

- **What economic data do we look at?**
  - US economic backdrop
  - Strength of the US and San Antonio consumer
  - Fiscal & Monetary Policy
- **Why is it beneficial?**
  - Identify risks to our financial plans & outlook
  - Recognize potential impacts to our customers
  - Optimize financial market access & liquidity


THE WALL STREET JOURNAL.

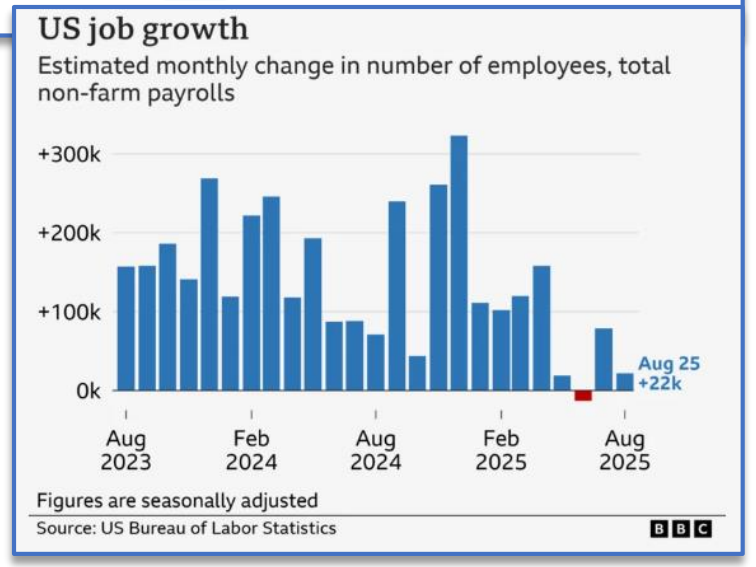
Latest World Business U.S. **Politics** Economy Tech Markets & Finance Opinion Arts Lifestyle Real Estate

Government Shutdown Drags On With Little Pressure to Break Impasse

Pain from missed federal paychecks, healthcare deadlines will mount, but Republicans and Democrats aren't budging for now

By Richard Rubin Follow and Siobhan Hughes Follow

Oct. 5, 2025 5:24 pm ET



Understanding the macro picture helps drive better business decisions and provides guidance on how we navigate our business landscape.

MACROECONOMIC CONDITIONS

KEY THEMES FOR THE US ECONOMY

Big picture

- The Federal Reserve (Fed) cut rates by 25 basis points in Sep. (~2 additional cuts in 2025 and ~2 in 2026 are expected)
- GDP 3.8% as of Q2 2025
- Inflation 2.9% as of August 2025, which has stabilized from post pandemic highs but above Fed target
- Current rate cuts are in response to a softening labor market and moderating inflation

Tariffs

- Risk to inflation is elevated however short lived as a one-time shock rather than entrenched price increases
- Business sentiment currently “wait and see” mentality with investment plans on hold due to tariff uncertainty

Employment

- Nonfarm Payroll jobs have gone from an average of 130k per month to 78k per month
- Labor supply also down due to stricter immigration policies
- Unemployment rate has increased to 4.3%

Government Shutdown / Policies

- The Fed is operating without key data from BLS and BEA
- 750k federal employees are being furloughed
- The shutdown could delay or reduce investment of grants in sectors reliant on federal funds

Consumer strength anchors the economy, but policy uncertainty and labor softness persist. Lower rates may help, yet we risk reigniting inflation.

MICROECONOMIC CONDITIONS
KEY THEMES LOCALLY (SAN ANTONIO)

Big picture

- Population growth remains in top 5 of major cities
- Locally, similar impacts from Fed actions: lower interest rates in auto, student, and consumer debt
- Utility rates locally among lowest in the country
- US Census: San Antonio remains 3rd most impoverished metro area nationally (~18% at or below poverty line)

Housing

- Despite Fed rate cuts, 30-year mortgages have increased due to future inflation expectations
- Supply of inventory has increased from 4.5 to 5.5 months YoY; median home prices have held steady ~300k
- Building permits slowing down compared to Q1 and compared to last year

Consumer Strength

- 85% of industries / sectors experiencing positive employment growth
- Unemployment rate of 4.1% below national average
- Sales tax receipts higher than rest of state (5.4% vs. 3.8%)
- Avg. private sector hourly wages lag rest of state ($31.7 vs. $34.5) but has seen an uptrend since pandemic

Government Shutdown / Policies

- ~38k federal workers in San Antonio metro, making the region sensitive to prolonged disruptions
- An extended shutdown could stall ~$150M in federal reimbursements
- SNAP, LIHEAP, and Housing assistance grants all facing deep cuts or elimination due to OBBBA

Source: The Federal Reserve Dallas Branch

San Antonio's economy shows resilience, but interest rate cuts that risk further inflation could weaken customer strength / demand who may have already been impacted by federal policies.

RECAP

- We monitor economic conditions both nationally and locally
- Nationally, the economy has been resilient despite policy uncertainty, a weaker labor market, and sticky inflation
- Around our service territory, economic fundamentals such as employment growth and retail spending have been strong; however, downside risks are present due to inflation and federal policies, which may dampen consumer strength
- We are monitoring these evolving economic conditions that may directly impact our customers' affordability, which in turn could influence retail load growth

THANK YOU

APPENDIX

GLOSSARY / DEFINITIONS

ACRONYM OR WORD	DEFINITION	ACRONYM OR WORD	DEFINITION
Gross Domestic Product (GDP)	A measure of all the goods and services produced in the economy over a period of time.	Operations & Maintenance (O&M)	Normal costs incurred to keep business operations ongoing
One Big Beautiful Bill Act (OBBBA)	A comprehensive budget reconciliation law enacted on July 4, 2025 that broadly addresses taxes, federal program spending and raises the statutory debt limit	Wholesale Revenue net Fuel (WRnF)	Total revenue generated from wholesale electricity sales after subtracting fuel costs.
Personal Consumption Expenditures (PCE)	Measures changes in the prices consumers pay for goods and services over time. It's the Federal Reserve's preferred inflation gauge because it accounts for substitutions consumers make when prices change.	Low Income Home Energy Assistance Program (LIHEAP)	A federal program that helps low income households pay for heating, cooling, and energy-related home repairs.
Supplemental Nutrition Assistance Program (SNAP)	A federal aid program that provides monthly food benefits to low-income individuals and families to help them afford nutritious food.	Bureau of Labor Statistics (BLS)	A Government agency that collects, analyzes, and publishes economic data on employment, wages, inflation, and productivity.
Bureau of Economic Analysis (BEA)	A Government agency that produces key economic statistics including GDP, personal income, and trade data		

ECONOMIC RISK BAROMETER

Indicator	Latest Figure	Risk Level (2)
Gross Domestic Prod.	Q2: *3.8%*	
Employment/Payrolls	August 2025: *22k*	
Annual Inflation (PCE)	August 2025: *2.9%*	
Retail Sales	August 2025: *0.6%*	
Consumer Confidence	September 2025: *94.2*	

Each of these indicators each have risk implications of varying degrees that impact our financial plans.

(2) Based upon potential impact and velocity to our existing financial plan

HOW IT IMPACTS OUR FINANCIALS

ECONOMIC INDICATOR		FINANCIAL IMPACT
Employment/Payrolls GDP Retail Sales Consumer Confidence	→	Non-fuel Revenue WRnF Bad Debt Expense
Inflation Interest Rates Tariffs	→	O&M Interest Expense Capital Budgets

These economic indicators play a key role in shaping our financial performance, ultimately influencing our enterprise financial and operational metrics.

RISK, RELIABILITY, AND RESILIENCY

PRESENTED BY:

Lori R. Lopez
Director, Technical Distribution Services

11/03/2025
Informational Update

AGENDA

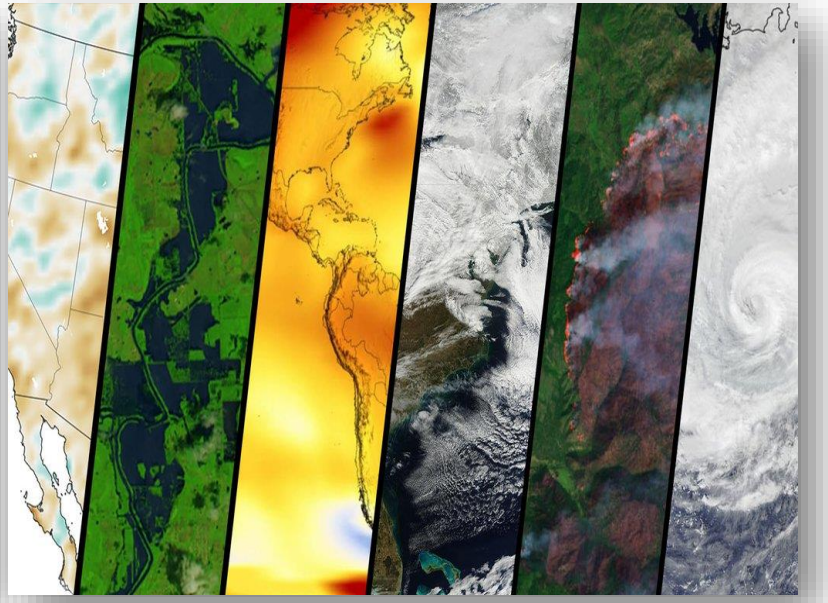
- Distribution Risks Overview
- San Antonio Weather Vulnerabilities
- Grid Hardening, Reliability & Resiliency
  - Wildfire Mitigation
  - Grid Automation
  - Artificial Intelligence (AI)
  - Microgrids & Backup Generation
  - Long Term Solutions

For reliability, our commitment is to proactively provide continuous improvement in building more resilient systems.

DISTRIBUTION RISKS
OVERVIEW

Infrastructure/Equipment Failure

Wildfire



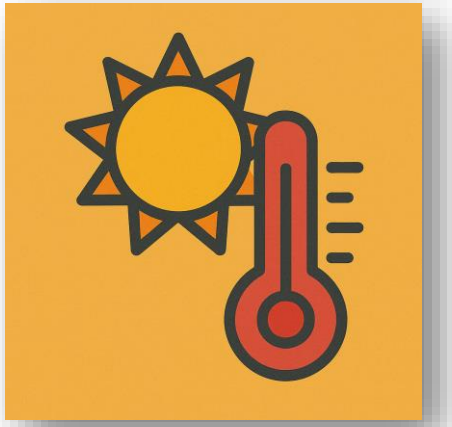
Extreme Weather

Three of the top risks for distribution can be mitigated with the same grid hardening, reliability, and resiliency programs currently underway or planned.

SAN ANTONIO WEATHER VULNERABILITIES

San Antonio experiences a range of weather conditions, but the worst weather conditions typically include:

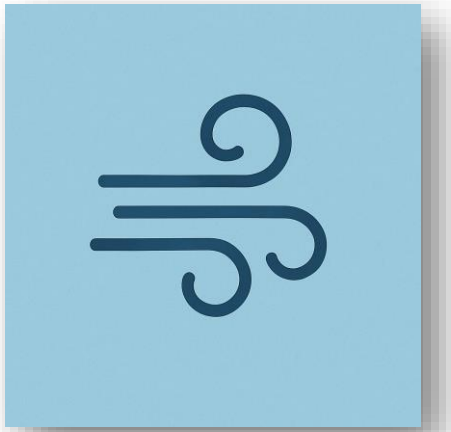
Thunderstorms



Heat Waves

Flooding

Winter Weather

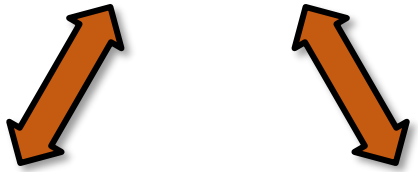


Wind

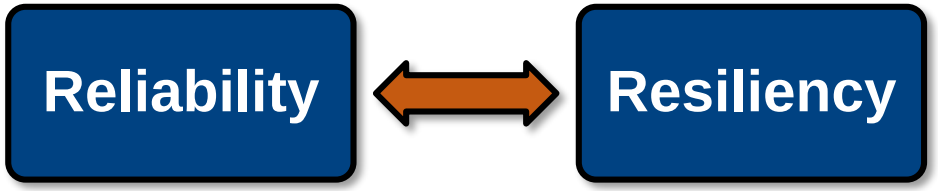
Our grid must withstand a wide range of weather events often related to severe storms, extreme heat, and flooding.

GRID HARDENING, RELIABILITY & RESILIENCY

A multifaceted approach to improving the grid's reliability and resiliency



Consistently available power



The ability of the grid to withstand and recover from power outages

Grid hardening, reliability, and resiliency are all important aspects of the electric grid.

GRID HARDENING

Grid hardening refers to the systematic enhancement of the electric grid to withstand and recover from threats such as extreme weather through the use of advanced technologies, infrastructure upgrades, and strategic planning to improve the grid's resilience and reliability.

Programs include:

- Vegetation Management
- Strategic Undergrounding of Power Lines
- Pole Inspection/Replacement
- Drone Inspections
- Animal Protection

Goal: Strengthen infrastructure to better withstand extreme weather.

WILDFIRE MITIGATION

Proactive Vegetation Management

- Annual investment exceeding $20 million

Wildfire Risk Targeting

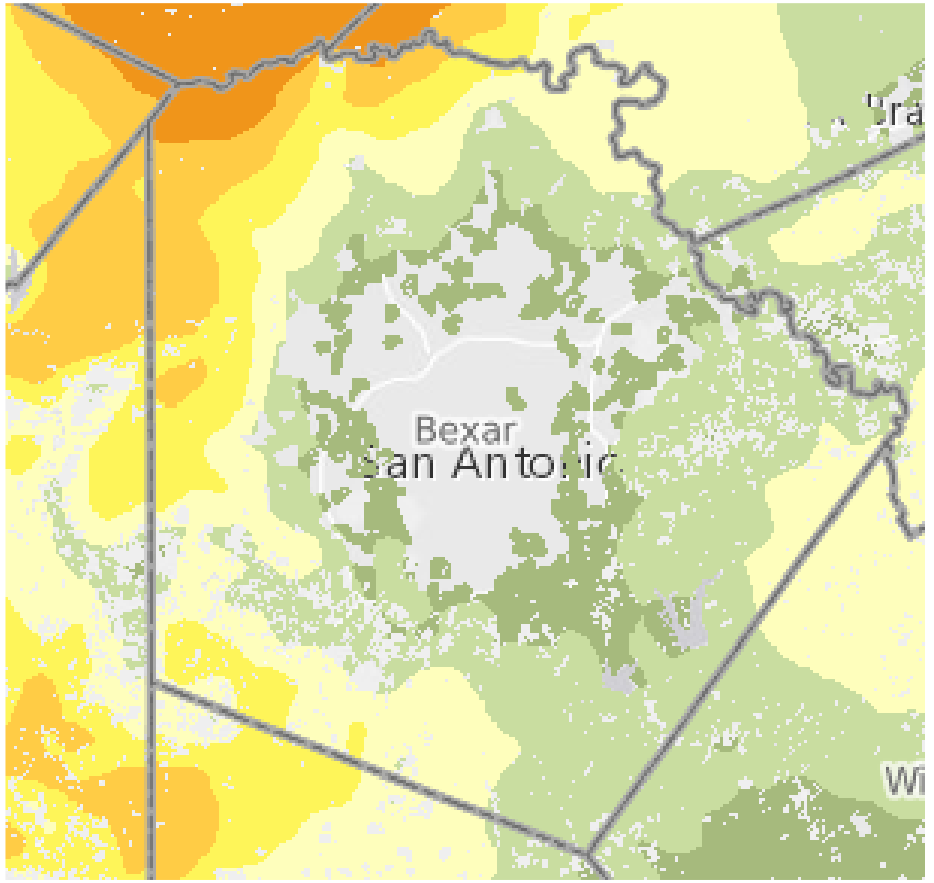
- Assets mapped against Texas A&M wildfire risk zones
- Ground line inspections of wood poles to identify degradation risks

Public Safety & Awareness

- Launched public-facing wildfire strategy webpage
- Community alerts and messaging tailored to high-risk zones

Coordination & Preparedness

- Wildfire tabletop exercises conducted with regional and state partners
- Awarded TDEM grant for a wildfire mitigation
- Implement safety settings during red flag warnings on high-risk circuits



Source: Texas Wildfire Risk Assessment Portal

Goal: Prevent utility equipment from sparking wildfires.

GRID AUTOMATION

Grid automation refers to the use of smart technology to manage the electric grid in real time such as sensors, automated switches and advanced meters.

Programs Include:

- Automated Switching Systems
- Advanced Metering Infrastructure (AMI)
- Sensors and Fault Detectors
- Grid Segmentation
- System Design

Recloser

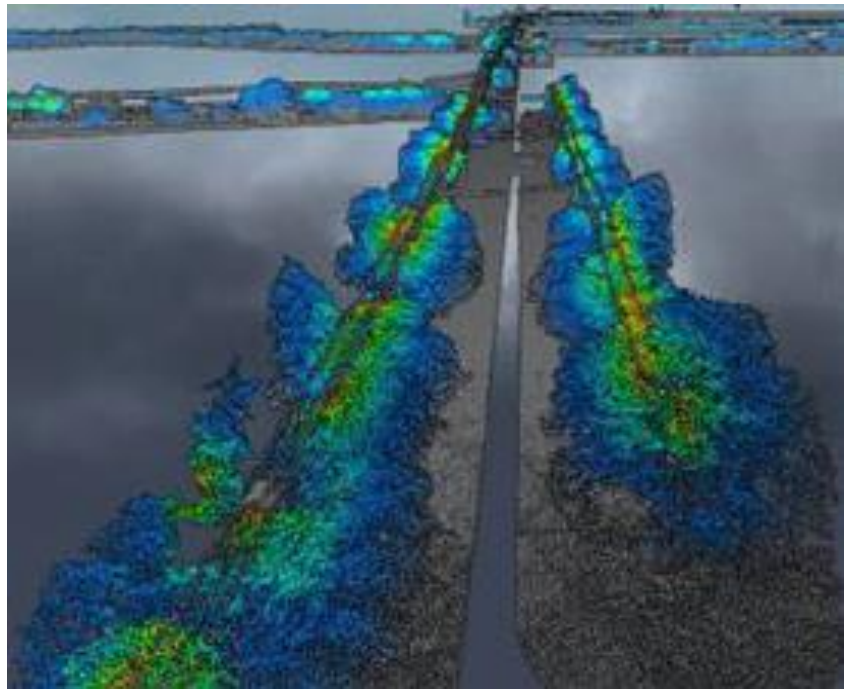
Goal: Improve detection, isolation, and restoration of outages.

ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) and **data analytics** enable utilities to proactively prepare for storms, prioritize asset management, and leverage real-time situational awareness for enhanced grid monitoring.

Programs Include:

- Advanced weather monitoring for outage prediction
- Use of LiDAR technology and drones to enhance vegetation trimming efforts and asset repairs
- Grid automation to improve outage detection, refines demand forecasting and advances the development of a self-healing grid



Lidar Technology

Goal: Improve decision making and system maintenance.

MICROGRIDS & BACKUP GENERATION

A **microgrid** is a small, local electric system that can operate independently from the main grid. **Backup generation** refers to equipment like generators that provide electricity when the main grid is unavailable. These solutions help maintain essential services during outages, improve community resilience, and support faster recovery after severe weather or other disruptions.

- **HEB Resiliency Project (~31 MW):** Enhancing reliability at 28 sites
- **SAWS Resiliency Project (~35 MW):** Natural gas generators at 15 water pumping stations
- **SwRI Partnership:** Developed a **5 MW solar array paired with 10 MWh storage** for enhanced grid reliability and research
- **ERCOT Mobile Generators:** We are working with ERCOT to facilitate the interconnection of 15 generators to 9 of our existing substations.
- **DOE GRIP Grant:** Awarded Federal cost match grant of $30.2 million supporting substation microgrid

Goal: Maintain power for critical services during grid outages.

LONG TERM SOLUTIONS

We will continue to harden the grid and mitigate risks to operational reliability and resiliency through improved planning and the use of advanced technology.

- Resiliency Plans & Benchmarking
- Advanced Technology
- Collaboration with Emergency Services

These programs will enable our journey towards Horizon 2050.

THANK YOU

APPENDIX

GLOSSARY / DEFINITIONS

ACRONYM OR WORD	DEFINITION	ACRONYM OR WORD	DEFINITION
AI	Artificial Intelligence	LiDAR	Light Detection and Ranging
AMI	Advanced Metering Infrastructure	MW	Megawatt
DOE	Department of Energy	MWh	Megawatt hour
ERCOT	Electric Reliability Council of Texas	TDEM	Texas Division of Emergency Management
GRIP	Grid Resilience and Innovation Partnership		

INFRASTRUCTURE/EQUIPMENT FAILURE

EMPLOYEE & PUBLIC SAFETY

Causes	Results
• Vegetation encroachment • Animal interference • Failure of aging infrastructure • Environmental exposure • Insufficient monitoring • Overloading and design limits	• Higher risks for personal harm to employees and public • Property damage • Service disruption • Reputational damage

How are we addressing this risk?	
• Vegetation Management Program • Inspections and Maintenance Program • Pole Replacement Program • Underground Cable Rehab Program	• Continued animal guarding of equipment • Community education (Arc & Spark) • Alignment of Reliability and Engineering Teams

WILDFIRE

INCIDENT PREPAREDNESS

Causes	Results
• Failed energized equipment • Vegetation contact with energized conductors	• Higher risks for personal harm to employees and public • Property damage • Electric infrastructure damage • Prolonged outages to customer areas impacted

How are we addressing this risk?	
• CPS Energy Wildfire Mitigation Plan • Vegetation management and circuit equipment inspections in key areas of elevated risks for fire • Pole Replacement Program • Breaking circuits into sections	• Community education (Arc & Spark) • Disabling reclose functionality at the distribution substation and circuit devices • Table-top exercises

EXTREME WEATHER EVENTS

INCIDENT PREPAREDNESS

Causes	Results
• Increasing frequency and severity	• Significant strain on grid infrastructure • Higher than planned costs • Increased frequency of outages • Need for changes in design standards

How are we addressing this risk?	
• Vegetation Management Program • Inspections and Maintenance Program • Hardening of infrastructure • Develop Resiliency Plan	• Maintain readiness plans • Deploy automation, monitoring and analytics in a systematic approach that makes sense to control costs

MICROGRIDS AND BACKUP GENERATION

A **microgrid** is a small, local electric system that can operate independently from the main grid. **Backup generation** refers to equipment like generators that provide electricity when the main grid is unavailable. These solutions help maintain essential services during outages, improve community resilience, and support faster recovery after severe weather or other disruptions.

Program includes:

- **Community Microgrids**: A local electric system that keeps power on for critical facilities or neighborhoods during outages.
- **Dual Purpose Backup Generation**: This can provide emergency power for both utility operations and critical community services, such as SAWS or H-E-B grocery stores, during grid outages. This helps keep essential services running when the main power supply is disrupted.
- **Future state**: Microgrids and backup generators are becoming increasingly important for resilience.

ERock natural gas generator at H-E-B

Goal: Maintain power for critical services during grid outages.

Distribution System Reliability and Resilience

Current Developments, Applications, and Future Potential

CPS Energy – Risk Management Board of Directors
November 3, 2025
San Antonio, TX

Durgesh Manjure
VP, Integrated Grid and Energy Systems

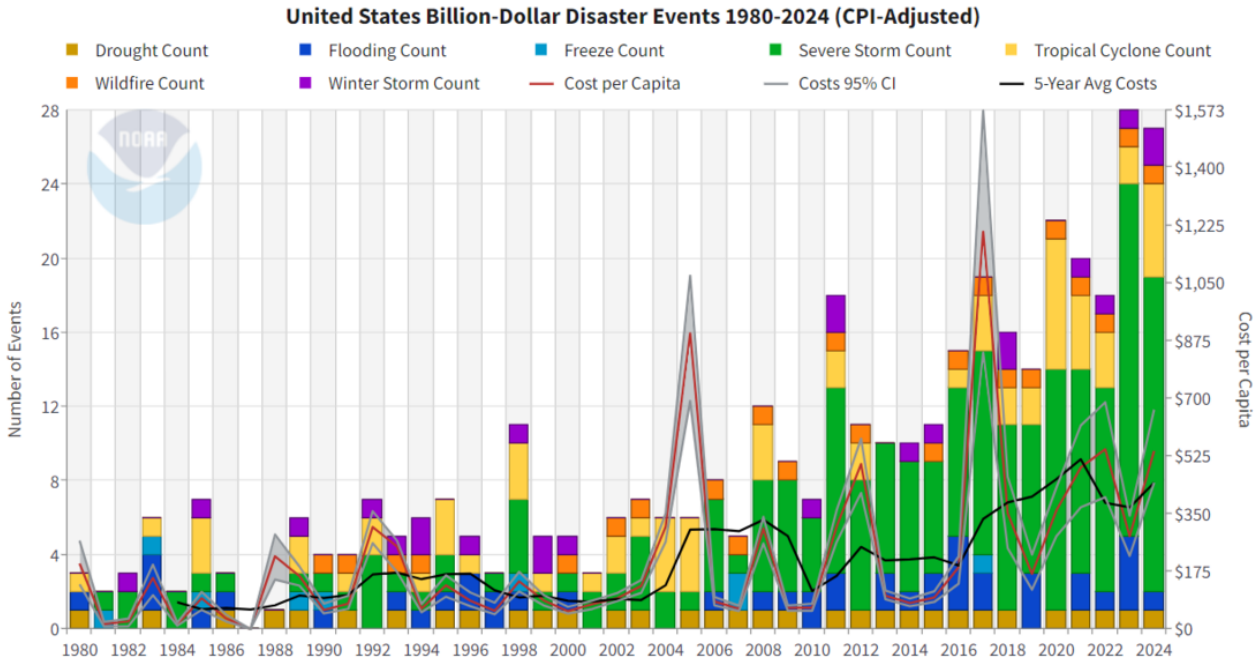
Executive Summary

- More disruptive weather events and increased customer reliance on the grid emphasize need for improved reliability and resilience.

- Technology solutions exist that utilities can proactively deploy to improve reliability and resilience.

- Diverse solutions deliver different benefits, making consistent evaluation critical to selecting the right approach; developing approaches for quantifying resilience improvements are an evolving research area.

Billion-dollar disasters are growing in cost and increasing in frequency



Billion-dollar disaster events in the U.S. from 1980 through 2024.
Source: NOAA

Canadian Insured Catastrophic Losses- 2022
Source: *Insurance Bureau of Canada, 2023*

Without informed and timely adaptation, costs from climate disasters are likely to increase.

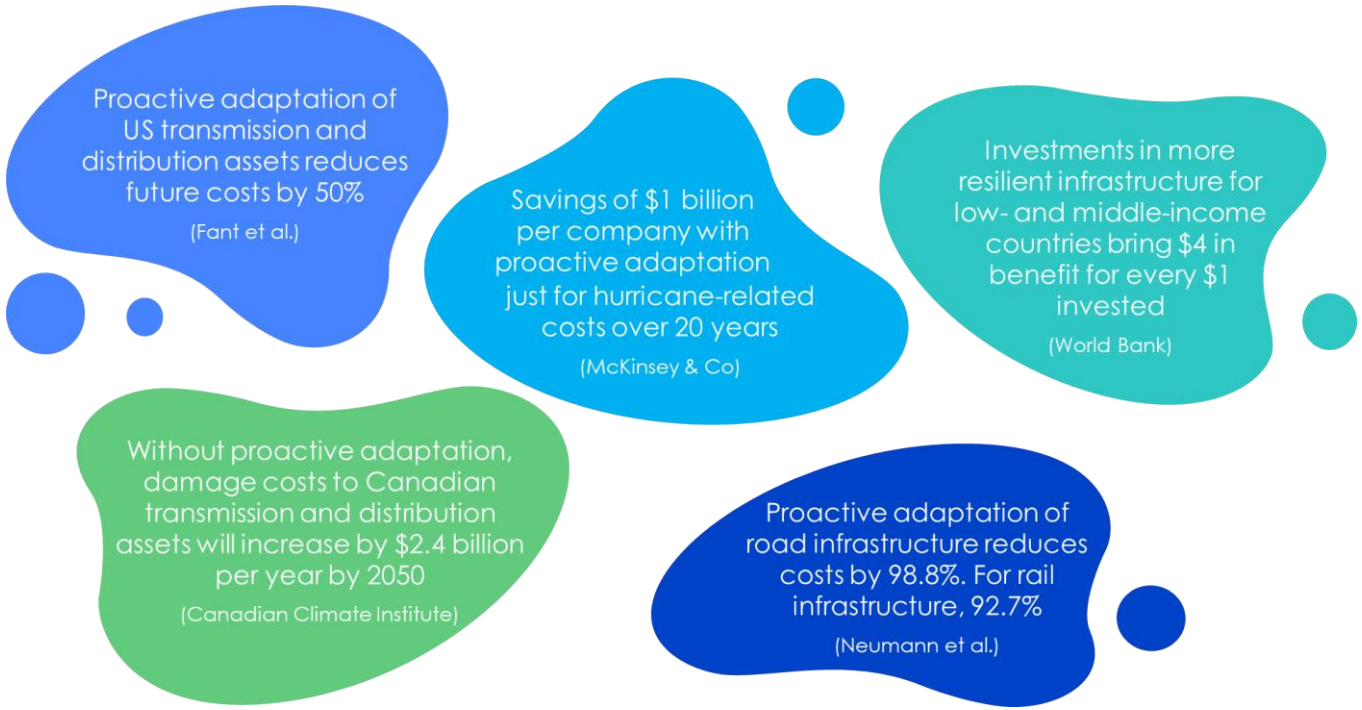
Proactive adaptation is consistently less expensive than a respond & repair approach

EPRI publication on cost and benefits of proactive climate adaptation…

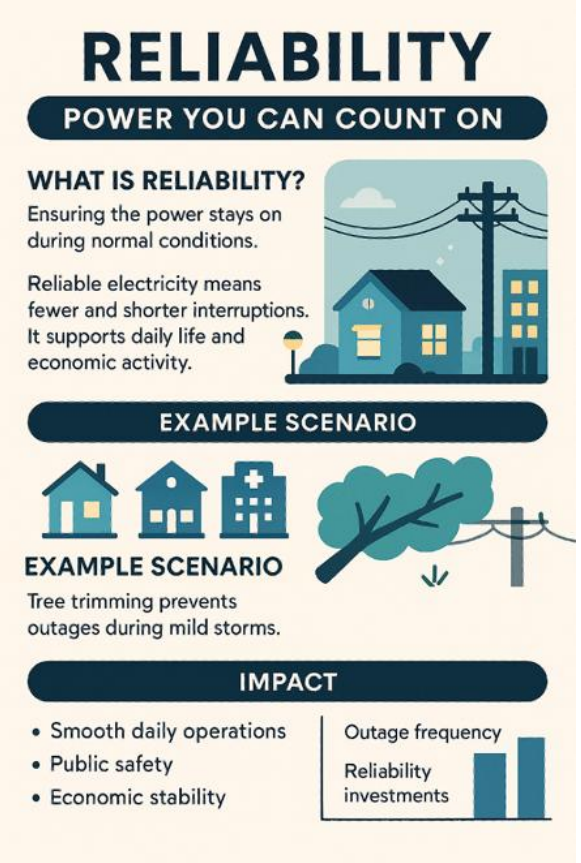
- Outlines and quantifies the benefits of proactively implementing climate adaptation strategies
- Explores costs of recent disasters and recovery, and comparisons to proactive hardening costs

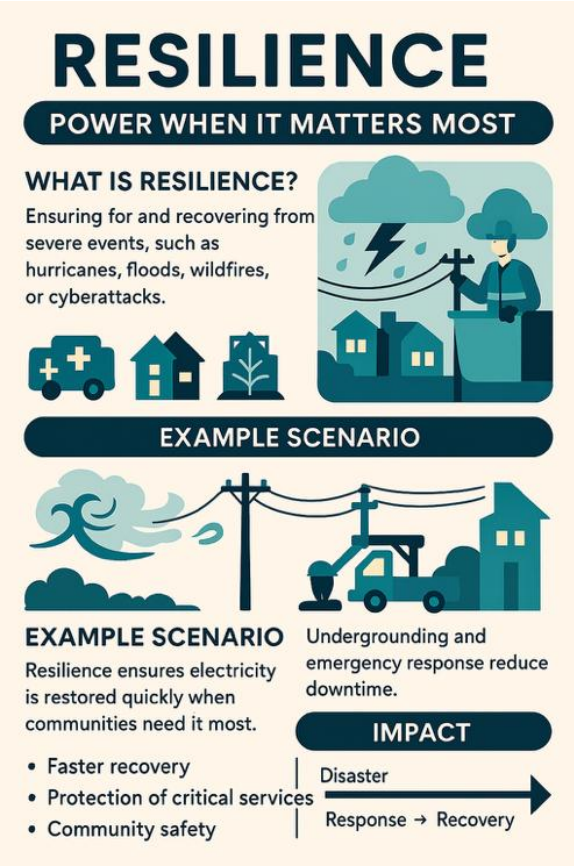
The body of literature on this topic is small, but findings are consistent…

- McKinsey
- World Bank
- Canadian Climate Institute



What is the difference between reliability and resilience?





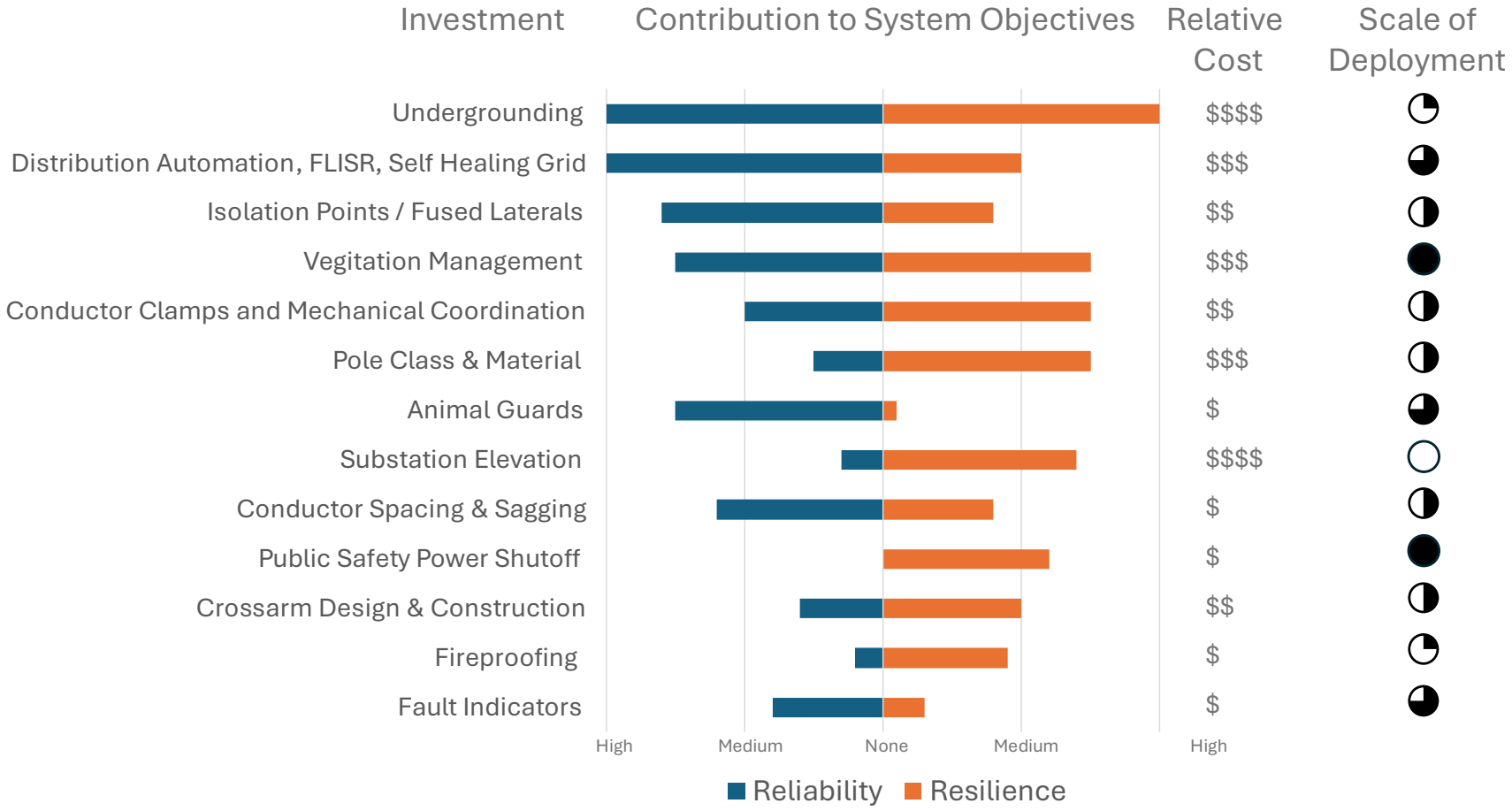
Reliability - The ability of the distribution system to perform its function under stated conditions for a stated period of time without failure.

Resilience - The ability to anticipate, prepare for, respond to, and recover from potentially disruptive events, while maintaining adequate level of system function and with minimum damage or adverse impact.

Distinguishing between reliability and resilience enables us to deliver everyday reliability while ensuring we can withstand extreme events.

Investments can have different impacts however mutually beneficial investments, can improve both reliability AND resilience

Common Solutions for Improving Reliability and Resilience*

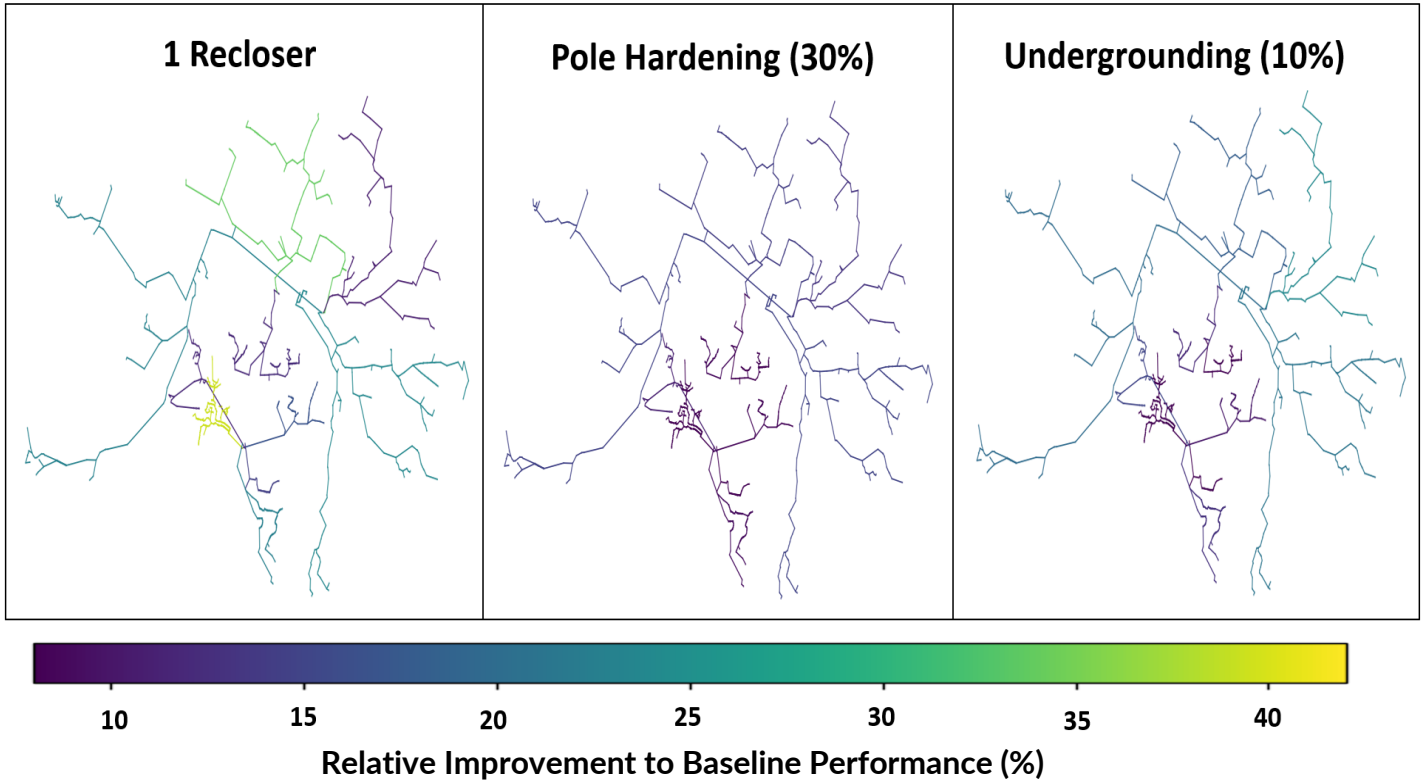


So how do we identify the "right" set of solutions?

*Scales are for illustration only

How do you choose the right solution option?

Comparative benefits estimation for project prioritization and justification

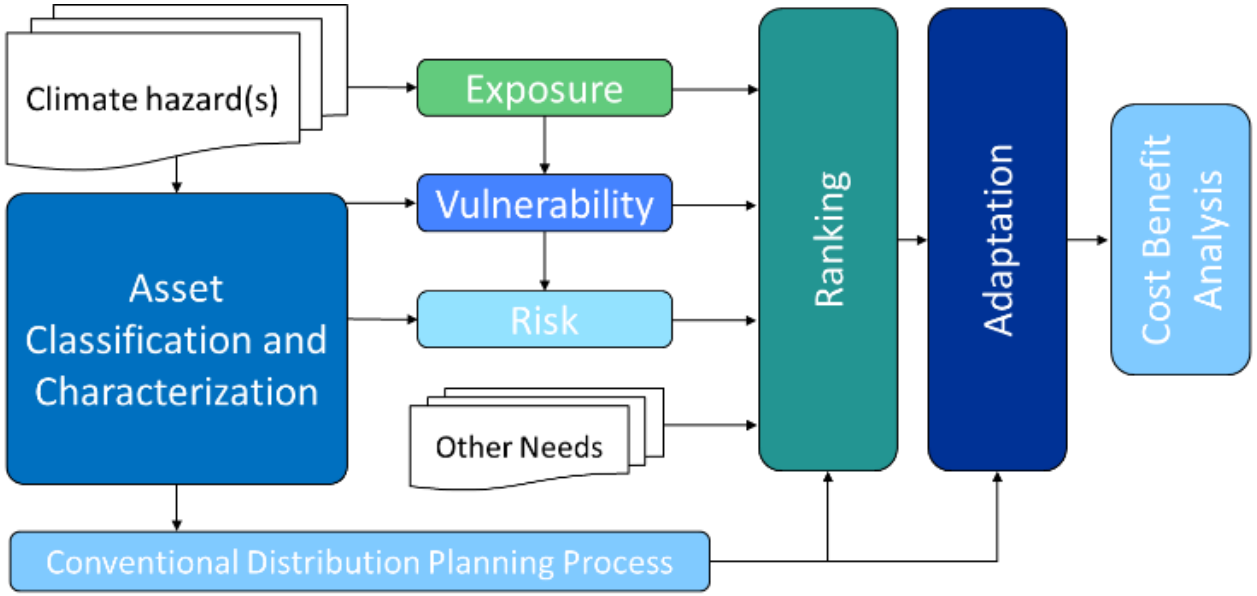


- Number of solutions exist, each offering distinct benefits.
- Solutions may have varying efficacies based on individual deployments.
- Consistent evaluation is difficult but crucial to choose the right solution.

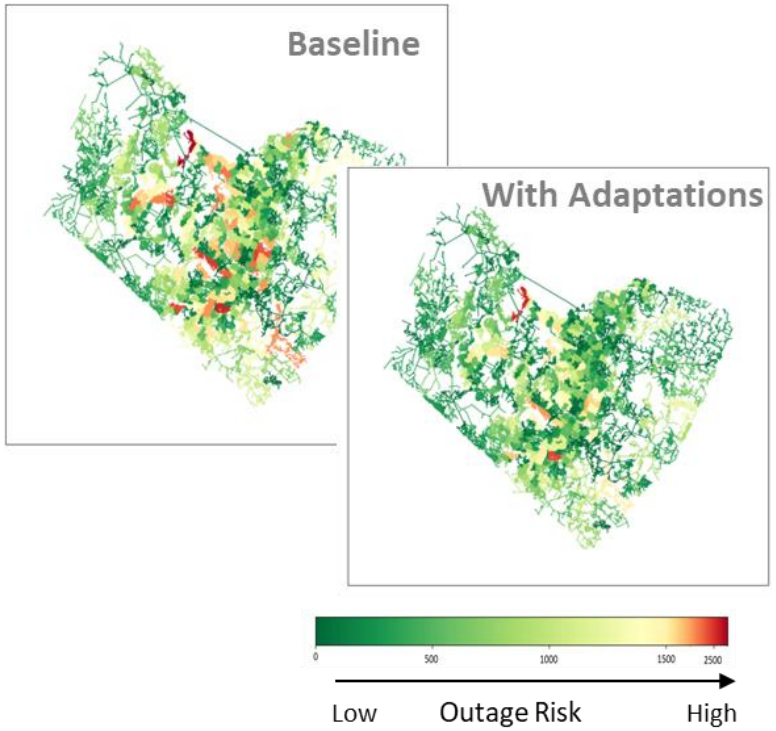
Diverse solutions deliver different benefits, making consistent evaluation critical to selecting the right approach

EPRI's Climate READi initiative has developed a framework to optimize distribution resilience investments

Climate READi Distribution Framework

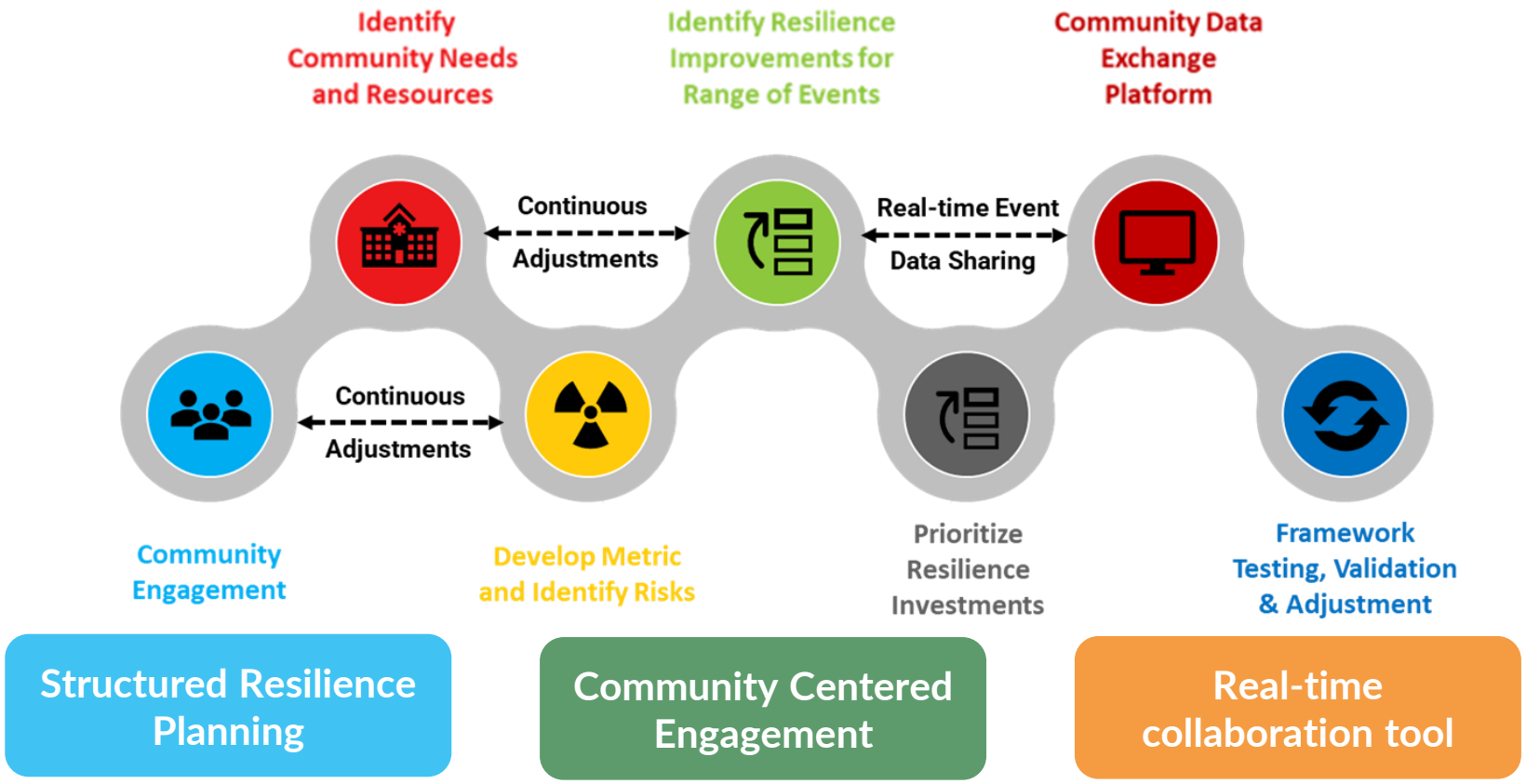


Optimized Resilience Adaptations and Investment Costs



Industry-accepted framework for identifying most vulnerable and at-risk areas of the distribution system and quantifying the most cost-effective solutions for increasing system resilience

ARCHER maps event risks to grid impacts and community needs, guiding targeted resilience investments

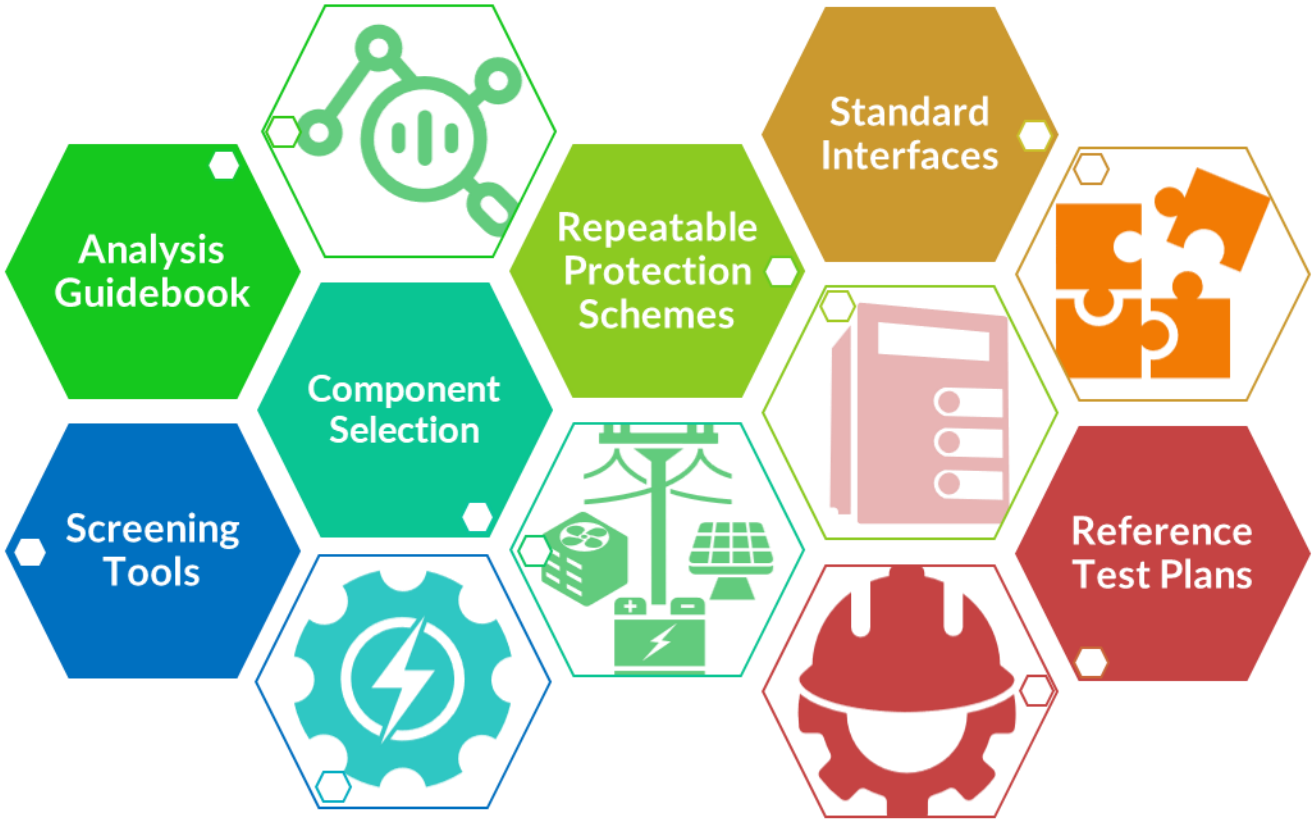


ARCHER: Accelerating Resilience of the Community through Holistic Engagement

DER & Microgrids afford an alternative approach for improving reliability and resilience

EPRI has developed a microgrid design and viability analysis process, that includes:

- Technology & Feasibility Assessment
- Controls, Design Evaluation, Integration, & Testing
- Interconnection, Practices, & Economics



Reducing risk and uncertainties in microgrid deployments…

DER: Distributed Energy Resource

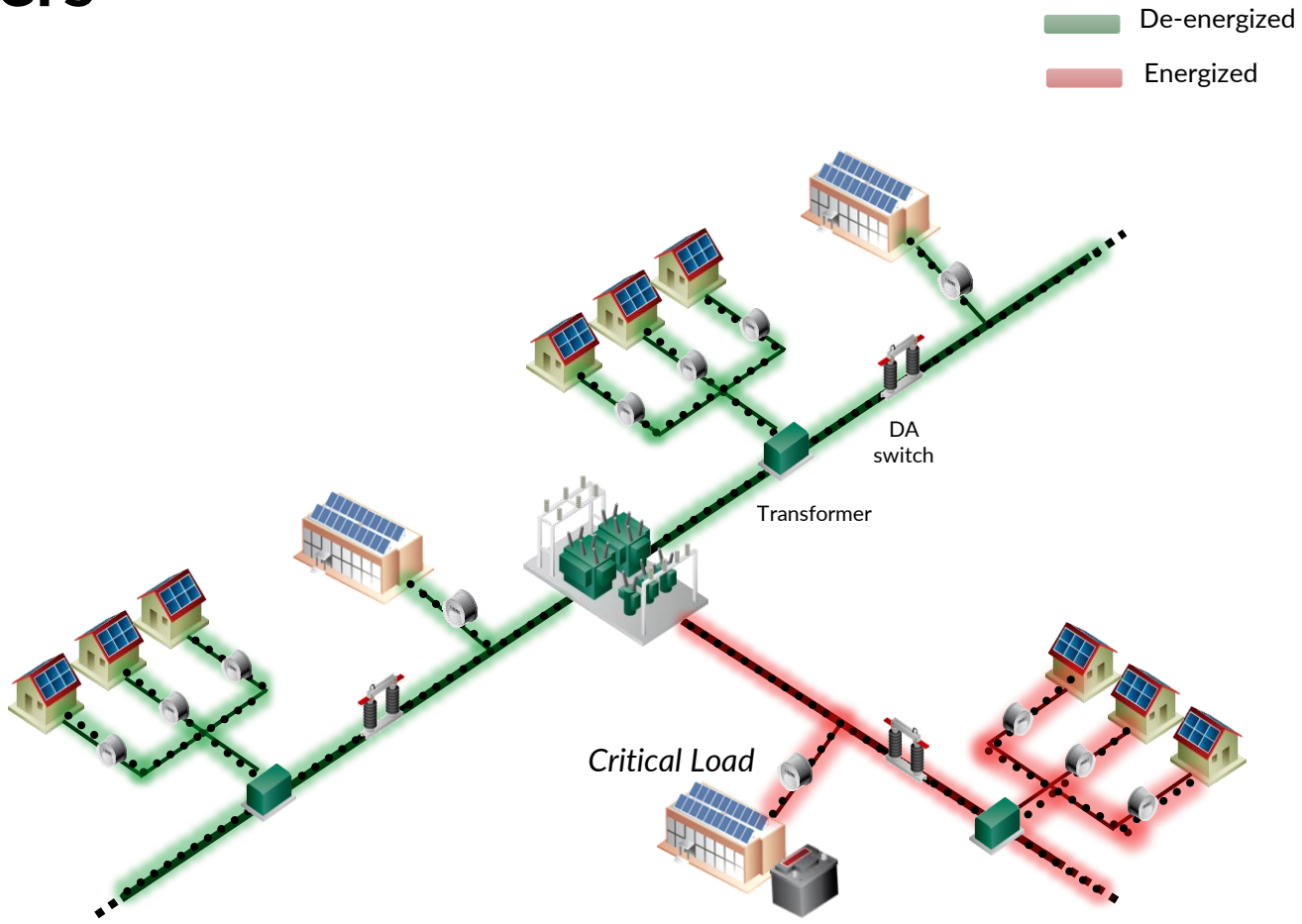
Leveraging AMI can potentially support resilience by enabling surgical shedding of non-critical customers

Current Approach:

During disruptive events, Distribution Operators perform feeder-level rolling blackouts to shed load.

The Challenge …

- Restoring power can be time consuming and complicated during extreme weather events
- Customer impact is significant
- Disconnects DER



AMI: Advanced Metering Infrastructure

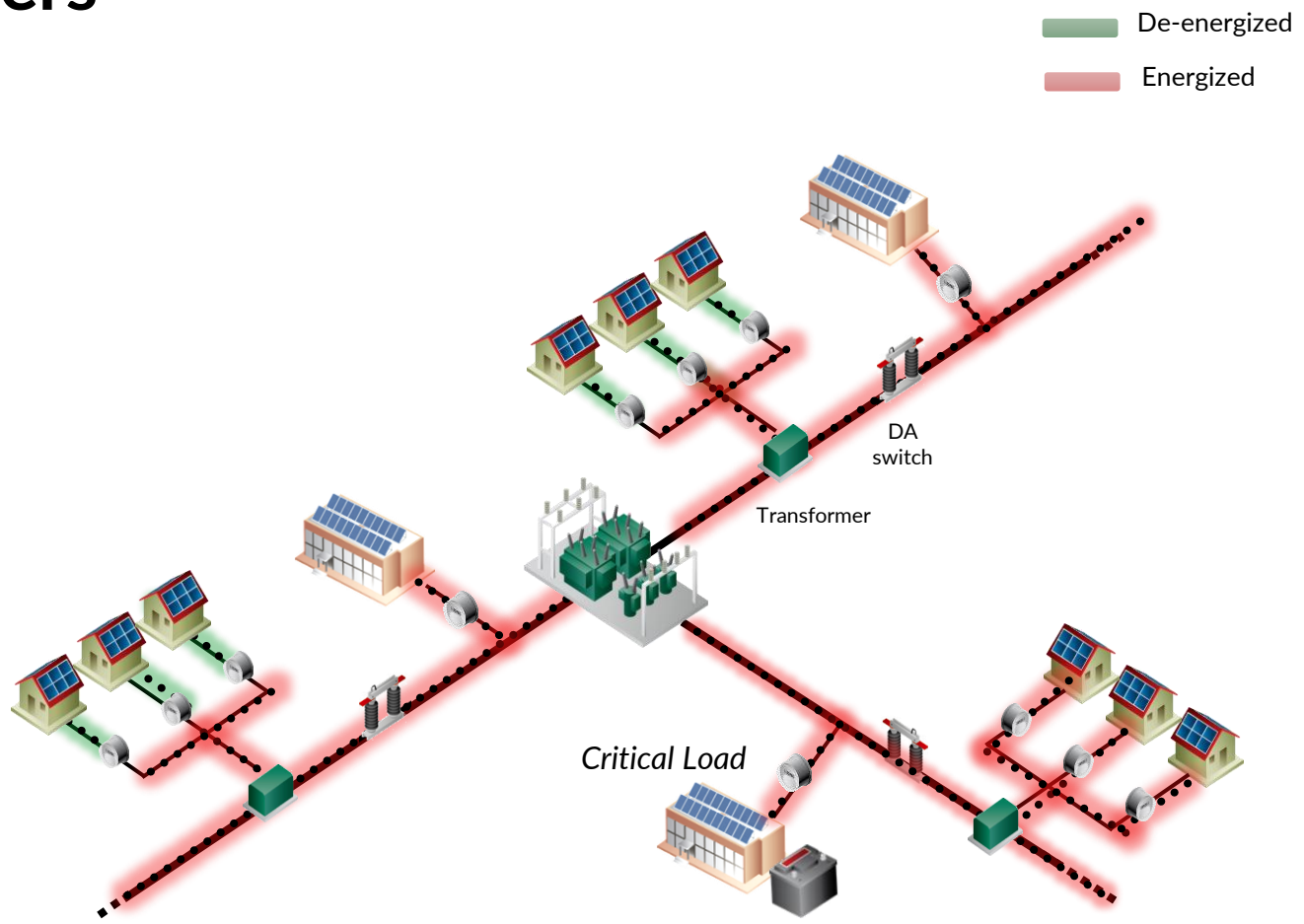
Leveraging AMI can potentially support resilience by enabling surgical shedding of non-critical customers

Proposed Approach:

Leverage capability within AMI to disconnect non-critical customers while still providing service to critical customers and keeping DER online

The Opportunity …

- allow utilities to maintain feeder protection and mitigate re-energization concerns (faults and cold load)
- maintain critical loads, and lessen the societal impacts
- support DER by leaving exporters on, including utility scale
- shed load from all feeders
- continue to work with the OMS



AMI: Advanced Metering Infrastructure

OMS: Outage Management Systems

How do you gauge resilience maturity and readiness to handle disruptive events?

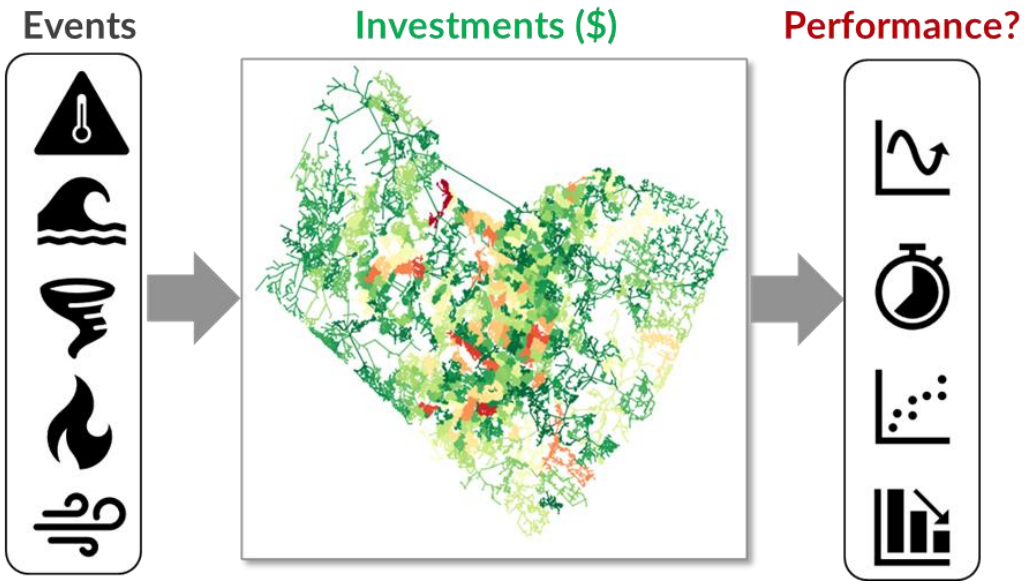
Distribution Resilience Maturity Model (DRMM)

DRMM enables utilities to quickly assess their organization's resilience maturity, benchmark across peer utilities, and strategically inform stakeholders with insights to guide investment and operational priorities.

Resilience metrics are a critical component of developing a well-informed path forward, but…

There are no well-defined resilience metrics for utilities to:

- Assess risk
- Prioritize & justify projects
- Demonstrate progress



EPRI is working to develop and improve resilience metrics:

- Collaborating with IEEE Distribution Resiliency Working Group
- Identifying and evaluating resilience metrics
- Analyzing utility outage data
- Performing case studies

Expected Outcomes

- Clearly defined suite of resilience metrics
- Metric application and reporting practices
- Guidance on project justification and benefit quantification
- Enhanced outage data collection practices

Utilities are spending billions of dollars investing in resilience improvements - metrics will enable a more effective assessment of those investments.

In summary…

- Extreme weather incidents are only expected to increase going forward, both in frequency and intensity.
- Utilities should proactively invest in improving reliability and resilience to ensure customer safety, service quality, and affordability.
- A range of technology solutions exist that can improve reliability and resilience.
- How do we know what the right solutions are – and that our investments are providing a reasonable return?
- EPRI is actively helping utilities by providing means to identify and prioritize investments as well as frameworks to assess their efficacy.

TOGETHER…SHAPING THE FUTURE OF ENERGY®

www.epri.com